North Clack Fire and Fuels Report

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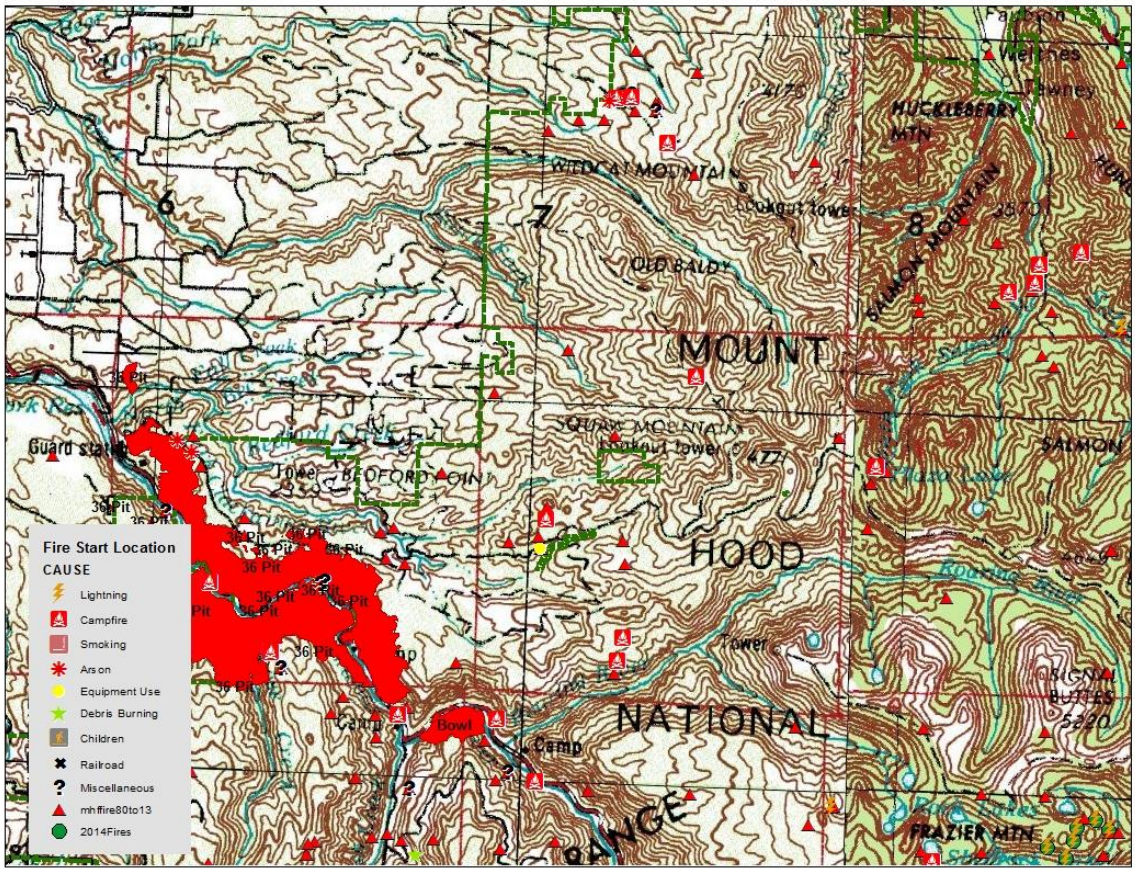
Fire History

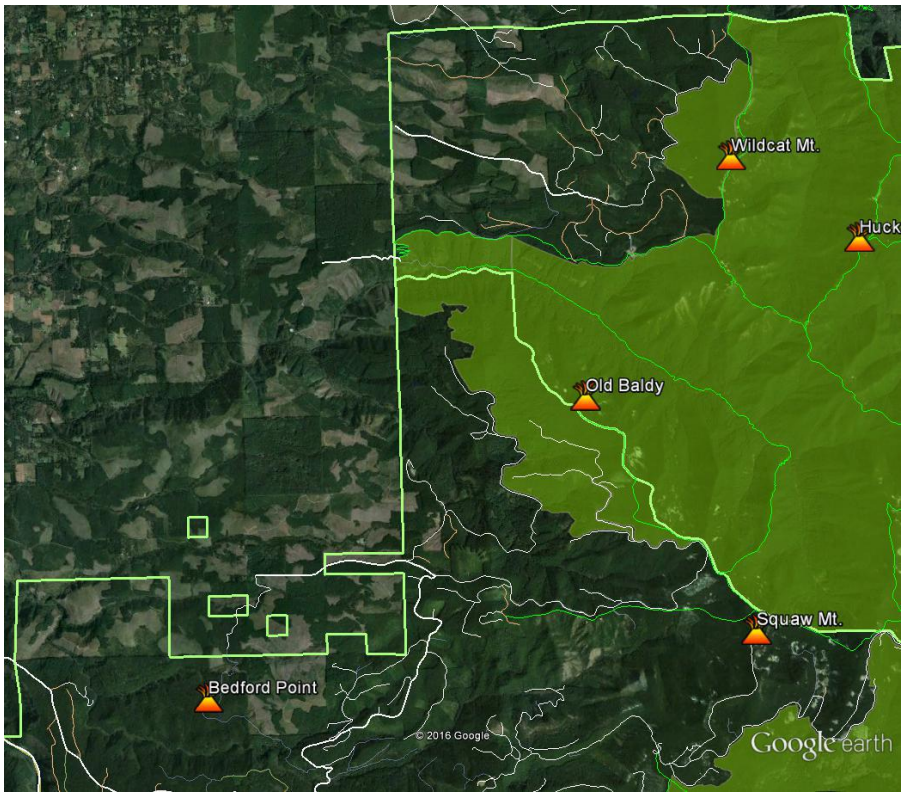
Hillockburn, 1902
La Dee Flats Fires 1929 and 1939
36 Pit Fire, 2014

Most of the project area has been burned and the area is predominantly covered with uniform stands of second-growth timber. This area receives some lightning, but ignitions from lightning are relatively infrequent. The risk of a human-caused fire is higher than lightning caused. This area is a high-use recreation area for OHV and target shooting. The human-caused 36 Pit Fire started on September 13, 2014 along Highway 224 and burned approximately 5,527 acres. This fire provides an excellent example of fire behavior, severity, size, duration and management challenges that would exist when a large fire ignites in or adjacent to the project area. The Bowl Fire from 2002 is 3 miles to the south along the Clackamas River. This human-caused fire was approximately 320 acres.



The North Clackamas Project Area is located along the westside of the Forest Boundary with adjacent Bureau of Land Management and private timberlands. The Wildland Urban Interface area along Tumala Mountain Road located on the Westside of the project area approximately one mile away.

The project area is adjacent to the Salmon-Huckleberry and Roaring River Wilderness areas.



Fuel Models

The primary carrier of fire in the TL fuel models is dead and down woody fuel. Live fuel, if present, has little effect on fire behavior.

TL5 (185) High Load Conifer Litter

The primary carrier of fire in TL5 is high-load conifer litter; light slash or mortality fuel. Spread rate is low; flame length is low. TL5 is predominately in the higher elevations along ridgetops.

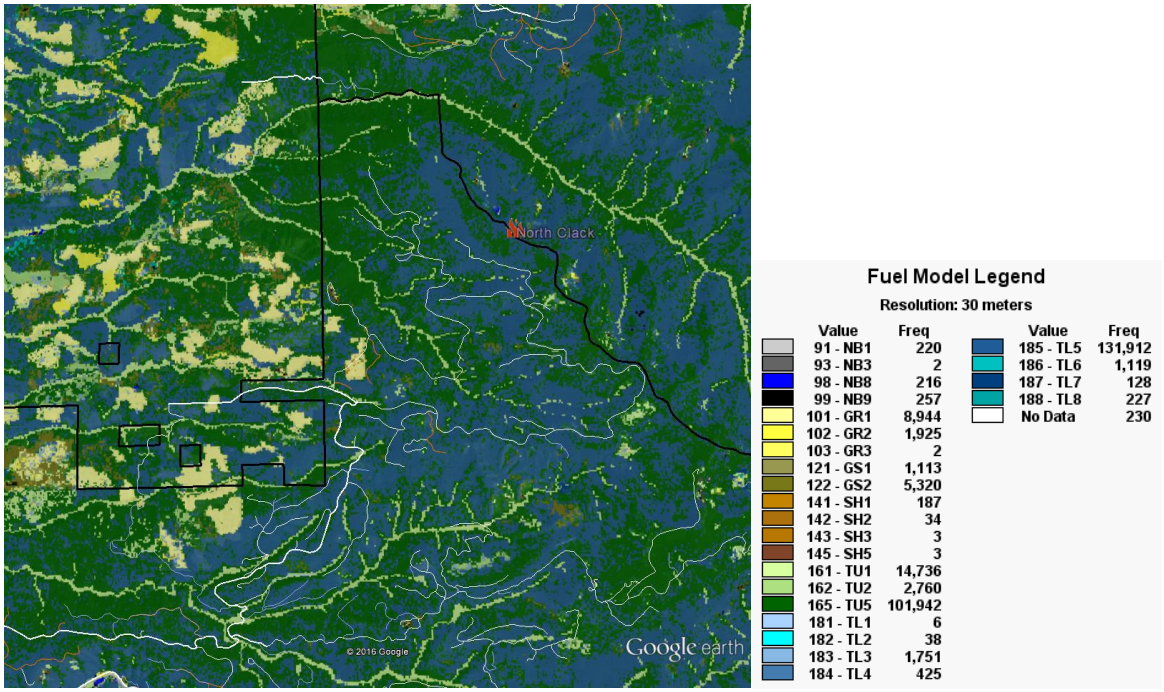
The primary carrier of fire in the TU fuel models is forest litter in combination with herbaceous or shrub fuels.

TU5 (165) Very High Load, Dry Climate Timber-Shrub

The primary carrier of fire in TU5 is heavy forest litter with a shrub or small-tree understory. Spread rate is moderate; flame length is moderate. TU5 is in the mid-elevations within the project area.

TU1 (161) Low Load Dry Climate Timber-Grass-Shrub

The primary carrier of fire in TU1 is low load of grass and/or shrub with litter. Spread rate is low; flame length is low. TU1 is present in the major drainage bottoms.



Topography

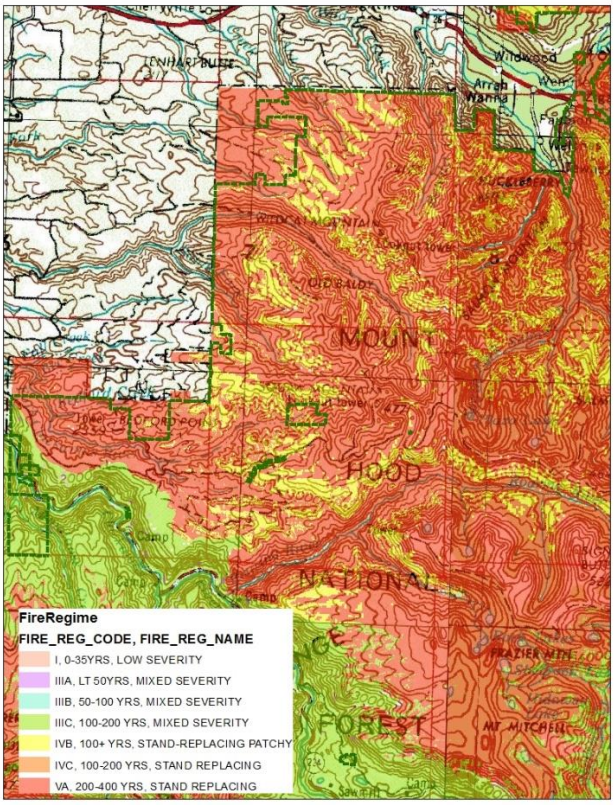
Elevation is between 700’ near the Clackamas River and 4500’ near Tumala Mountain
Slope ranges from 5-47° in the Roaring River Wilderness
Deep drainages can funnel winds

Adjacent Landscapes

Salmon-Huckleberry Wilderness
Roaring River Wilderness
Private Timber Lands
Clackamas River

Much of the adjacent private timberlands appears to have been clear cut and currently area a mix of aging slash, young trees and grass. This fuel is capable of supporting fast-moving surface fire.

Fire Regime



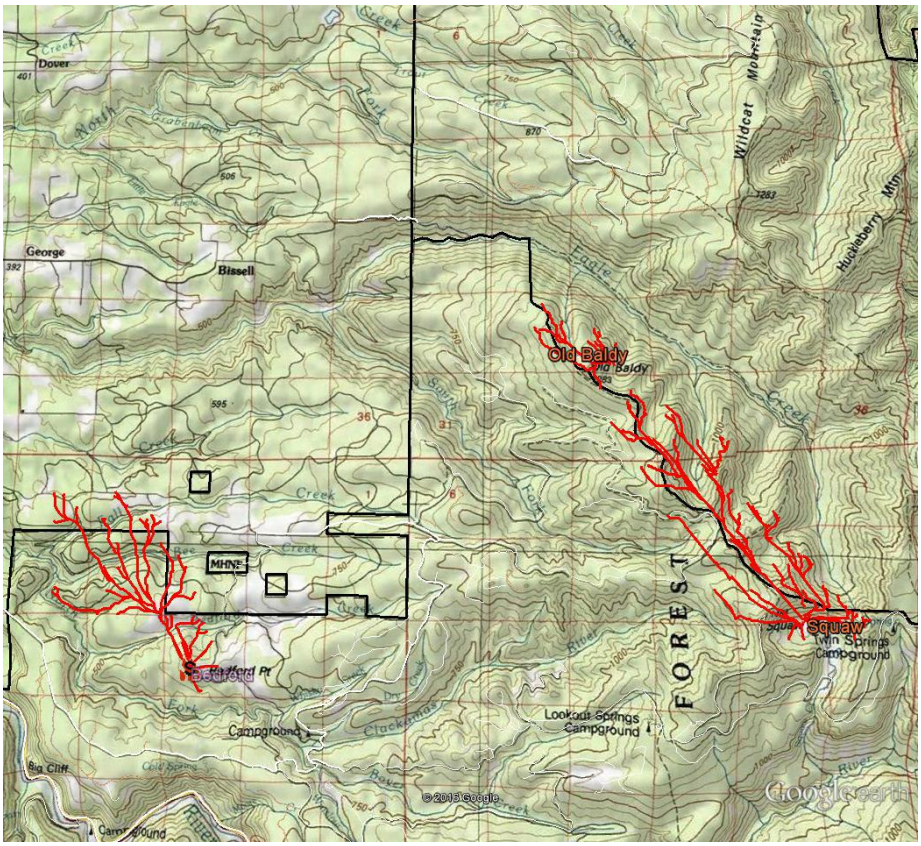
Values at Risk

The resources that are present are of high value and high consequence if they are impacted by wildfire. Fires would be managed to be contained inside of the Forest boundary or if they start outside the boundary, they would be kept outside of the boundary. Fires that cross jurisdictions pose challenging management priorities, objective, strategies and tactics. The Wildland Urban Interface (WUI) along Tumala Mountain Road makes suppression of large fires even more complex as evacuations could be possible.

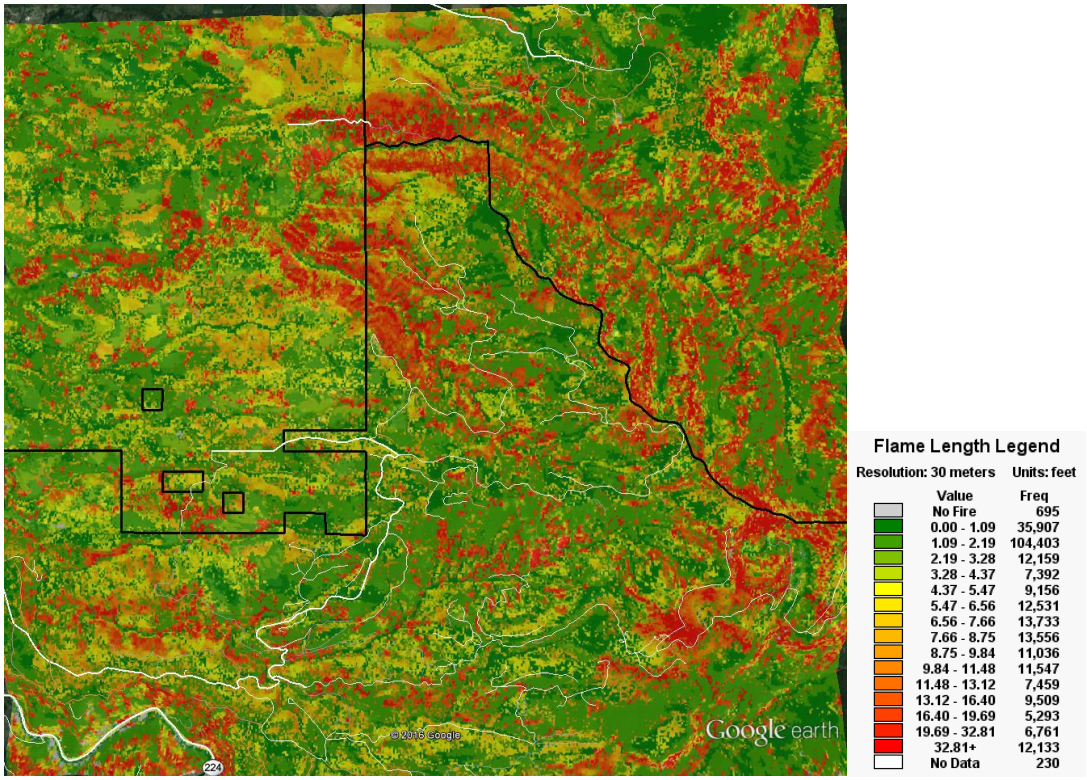
Value at Risk	Distance	Direction	Consequence
Tumala Repeater Site	Within		High
Tumala Mt. Road WUI	1 mile	West	High
Private Lands near Forest Boundary	Within	West	High

Fire Modeling

The Wildland Fire Decision Support System was used to complete preliminary fire modeling. Each ignition point was designed to be a lightning strike along the high points in the project area. Weather conditions from September 2014 were used as an example of real-life high-fire-danger conditions. Each fire was run for a maximum of three days. This model assumes that no suppression tactics are used to slow or stop progression (a potential situation when suppression forces are stretched thin by fires elsewhere). The red lines indicate major paths a fire would likely take with the predicted weather. Each fire showed large growth and fire runs of approximately 1 to 3 miles. The Bedford Point ignition crosses the Forest Boundary and getting close to the WUI.



Flame lengths for the project area range from 1 to 3 feet along ridge tops and increase to 4 to 10 plus feet in drainages as a result of topography, fuel and weather aligning to create high-fire behavior.



Fuel Management Opportunities

Fuel breaks at Wilderness boundary
Fuel breaks along Forest boundary
Fuel breaks along ridge roads
Break up continuity of mid seral stands
Low to moderate intensity prescribed fire
Deer and elk habitat enhancement
Viewpoints opened
Proactive action prior to wildfires
Maximize the effectiveness of initial response
Fires in the Wilderness have a high resistance to control.

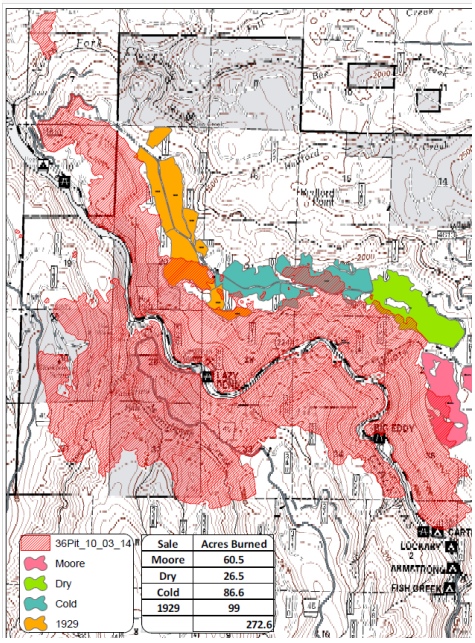
Fire-behavior modeling show the highest flame lengths along the slopes of prominent drainages. Fuel reduction along roads above these drainages have the potential to reduce flame length and allow for more successful fire-suppression strategies and tactics. Fuel treatments are most effective along the upper 1/3 of the slope. The 36 Pit Fire is an excellent example of how thinning units can reduce fire behavior adjacent to steep slopes.

Fires in Wilderness areas would be difficult to suppress due to access/egress, steep slopes and heavy fuel loading in the surface and ladder fuel. This fuel loading can have the potential to transition fires from the surface to the crowns.

Forest Road 4610 from 4613 to Plaza Lake this road is the best option for fuels work for fire coming out of the Wilderness. This ridgetop road with strategic fuel reduction projects would make this road extremely useful for a fire in the Wilderness.

Fuel Break

The North Clack Integrated Resource Project includes two fuel breaks. One along Road 4610 and one along the property boundary. The purpose of the action is to reduce the potential for wildfire hazard, reduce wildfire behavior and the spread of wildfires moving on or off the Forest. Creating fuel breaks along the Forest and private boundary would reduce fuel loading and increase the canopy height by reducing ladder fuels. Fuel breaks along roads connecting to thinning units would create a larger landscape method to break up the continuity of fuels in this area. This has the potential to reduce fire size and aide fire-suppression activities. The North Clackamas area is a high-use recreation area with a history of large fires, first noted in the late 1880s, 1902, 1929, 1939 and 2014's 36 Pit Fire that burned over 5,500 acres. Thinning units in the 36 Pit Fire area, reduced the fire behavior and fire spread due to the lack of fuel continuity and limited ladder fuels. The thinning units provided locations for fire-suppression resources to establish fire lines. The need for action is based on current conditions, fire hazard, fire history and proximity to private property and Wildland Urban Interface.



Fire Management

Large, intense wildfire is not the desired condition for this landscape at this time. The landscape is managed for many human values such as scenery, clean air, recreation, safety, and timber production. It is also managed to provide habitats for rare species. The Mt. Hood Forest Plan, as amended by the Northwest Forest Plan, requires an appropriate suppression response for all wildfires in this area to protect these values.

The preferred fire-suppression strategies and tactics are those that provide primarily for firefighter and public safety and secondly would be the most cost-effective commensurate with the objectives for the

Fire Management Unit (FMU) and/or Land Management Area within which the fire occurs. Initial action on all wildfires is to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety (USDA 2012). All fires in the project area are actively suppressed at the smallest footprint.

Forest Plan Consistency

The following section addresses management goals, desired future conditions and standards and guidelines from the Forest Plan that relate to fire and fuels. Page numbers are from the Forest Plan unless otherwise noted. The numbered sections provide the text from the Forest Plan as amended, and the italicized text is an explanation of how this project fits with those management goals, desired future conditions and standards and guidelines.

Provide fire protection, fuels treatment and pest management programs that are responsive to land and resource management goals and objectives. (#22, p. Four-4)

The action alternatives would contribute toward this goal because a fuel treatment would reduce fire size and intensity, aid in the suppression of wildfires and would minimize risk to resources.

An appropriate suppression response will be made to all wildfires. When fire-suppression forces reach the wildfire, they will apply the appropriate fire-suppression strategy, which allows for the control of the fire with minimum cost plus damage to the resources affected. (p. Four-25)

The action alternatives would result in a situation where fire-suppression forces would be able to safely suppress a wildfire. Wildfires are expected to be smaller, suppression costs would be reduced and there would be reduced impact to resources.

The project is consistent with the standards and guidelines at FW-262 to 268 that address prescribed fire and burning plans.

Other Management Direction

The Mt. Hood National Forest Strategic Fuel Treatment Plan, 2012

The Mt. Hood National Forest Strategic Stewardship Plan, 2009

The Mt. Hood National Forest Vegetation Management Strategy, 2009

The Strategic Stewardship Plan and the Vegetation Management Strategy address vegetation management goals that prioritize community protection from wildfire and restoration and maintenance of ecosystem resilience. The plans support management activities that work toward the desired future condition of the Mt. Hood National Forest: a healthy, diverse, and resilient landscape that can adapt to future disturbances with minimal negative effects to ecosystems. The Strategic Fuel Treatment Plan builds upon the goals of the Strategic Stewardship Plan and the Vegetation Management Strategy and outlines a framework to work toward the desired future condition. Landscape-level fuels management relies on strategically placed fuel treatments over a fraction of the landscape to effectively modify wildland fire behavior. This Strategic Fuel Treatment Plan spatially identifies potentially advantageous sites for fuel treatment on the Forest including buffers adjacent to private lands and fuel breaks along

roads near ridges and Wilderness areas to compartmentalize the landscape facilitate indirect suppression efforts during a wildfire.

Glossary

Under burning - Prescribed burning under a forest canopy.

Broadcast Burning - Prescribed burning activity where fire is applied generally to most or all of an area within well-defined boundaries for reduction of fuel hazard, as a resource management treatment, or both.

Jackpot Burning - A prescribed fire to deliberately burn natural or modified concentrations (jackpots) of wildland fuels.

Fire line - A line or trail dug to mineral soil removing all burnable material. Fire line is used to stop fire spread by removing fuel. The line width can be several inches to several feet wide.

Hand line - Fire line constructed with hand tools.

Dozer line or plow line - Fire line constructed with plows, dozer blade or other mechanical equipment.

Proposed Fuel Treatments

Slash that ends up at landings would be piled for later burning or removed to use to block roads. Where harvesters are used, slash would be placed in front of equipment and crushed down as the machine moves. This crushing down of slash in some units is not quantified in the table below.

Under Burning is proposed including either broadcast burning or jackpot burning depending on fuel uniformity. Because fuel quantities and distribution can only be estimated at this time, a post-harvest assessment would be conducted and a burn plan would be developed to insure that resource objectives can be met in a safe and efficient manner. Under burning would reduce activity fuels and accumulated natural fuels, prepare the site for planting, thin or kill brush and small trees in the understory, reinvigorate browse plants, and reintroduce fire on the broader landscape.

While some units are listed below as the focus of burning efforts, some fire would be allowed and encouraged outside of those unit boundaries as specified in the burn plan. Because harvest unit boundaries are often not the safest or most efficient locations for prescribed fire boundaries, the placement of prescribe fire boundaries within or in strategic locations outside the identified harvest boundary would allow for safe and effective management of the prescribed fire and would minimize construction of hand fire lines or dozer fire lines. The intent is to use natural barriers, existing roads, skid trails or other features to effectively manage the area burned.

Other Treatments

Other fuel treatments are estimated based on initial field visits. It is often difficult to estimate the eventual quantity and distribution of activity fuels; therefore, sometimes adjustments are needed after

post-logging inspections. Project design criteria would be used to guide changes to fuel treatments, if any.

Fuel Treatment Type	Estimated Acres
Grapple Piling [1]	135
Fuel Break Piling [2]	150
Under Burning [3]	256
Meadow Burn	2

[1] Grapple piling would use a tracked excavator or log loader machine to mechanically pile slash for later burning. In all or portions of Units 82, 116, 120, 151, 152, 182, 184, 191, and 204.

[2] Piling of slash and brush along Road 4610 and along the Forest boundary.

[3] Under burning to reduce fuels, and in regeneration harvest units, to prepare the site for planting. In all or portions of Units 94, 96, 132, 136, 138, 152, 164, 165, and 170.

Direct and Indirect Effects

With no action, the modeled flame lengths would exceed 4 feet in some areas. These flame lengths pose a hazard to suppression resources and increase the likelihood of large fire growth. Increased fire intensity would impact resources and air quality. With no action, there would be no activity fuels to treat.

The proposed vegetation treatments would not reduce or prevent wildfire occurrences but they create conditions that moderate fire behavior and increase effectiveness of suppression efforts. It would reduce fuels, alter the distribution of fuels, and increase forest health and diversity. Thinning has the potential to reduce flame length and moderate fire behavior. Low intensity prescribed fire is proposed in some units to break up the continuity of the fuels.

The proposed vegetation treatments would compartmentalize the landscape into blocks that are spatially separated and adds fuel breaks along Road 4610 and the Forest boundary. This facilitates fire suppression and reduces associated costs and has the potential to moderate fire behavior by reducing flame lengths to less than 4 feet on treated portions of the landscape and limit the potential for surface fires to transition to crown fires. These treatments would provide suppression forces places to anchor their fire attack.

Generally, fuel treatments aim to reduce surface fuels, increase crown base-height, and decrease the amount and horizontal continuity of canopy fuels (Scott 2001, Agee 2005). Effective fuel treatments mitigate fire severity within treated stands (Pollet 2002, Graham 2003, Agee 2005, and Cram 2006).

Some branches and tops and other debris created in thinning units would be retained on the ground to decompose naturally to enhance site productivity. In units operated with a harvester machine, branches and tops would be placed in front of the machine and compressed as it progresses through the stand. Previous experience with similar thinning has shown that snow pack and processes of decay cause the fine debris to break down and compress to the point where fire hazard is lessened. During the recent 36 Pit Fire, a crown fire dropped to a low-intensity ground fire when it encountered thinned stands treated similarly within two years prior to the fire.

In the fuel breaks, the fuels would be reduced to approximately 7 tons per acres. This reduction in surface and ground fuels would reduce the resistance to control of fires in this area and have greater potential to keep fires manageable for suppression resources.

In the short term (1-2 years), there would be increased surface and ground fuels due to logging slash. Once the slash piles are burned and as the decomposition of fine fuels occurs, fire hazard for this area would be reduced.

The Forest road system is integral for fire management on the Forest. Fire-suppression strategies typically use engines and hand crews as the primary initial attack strategy; these require roads to get as close as possible to the fire origin. On large extended-attack fires, roads provide efficient and effective pre-existing control lines. It is more efficient and less impact on the land to utilize existing roads as much as possible for primary, secondary and contingency lines rather than creating hand line or dozer-line. Roads are strategically used for direct-attack containment lines and indirect-attack burn out operations. Roads provide effective escape routes.

Closing roads with intensive techniques like decommissioning, berms or deep piles of slash hinders initial and extended attack efforts by reducing access, limiting tactics and management options to effectively suppress fires.

Cumulative Effects

Because wildfires can be large, the appropriate scale for cumulative effects analysis is the three watershed analysis areas that overlap the project area: North Fork Clackamas, Roaring River, and Lower Clackamas. This analysis area is appropriate because it is large enough to encompass the size of a typical wildfire in this area. It includes many acres of private land and BLM managed lands. The time frame for the discussion is quite long – approximately 100 years which represents the approximate time that fire-suppression actions have occurred in the project area.

The analysis includes all past management actions including timber harvest and road construction. The management on private lands would likely continue, however since vast areas have been converted to young plantations, there is not much more land to be logged. Most of the private land plantations have had some fuel reduction but also have flammable grass and weeds. The OHV use in the area represents a potential for human-caused ignition either through carelessness, improperly maintained vehicles, or crashes. The recent 36 Pit Fire has reduced some ground fuels, but there is the potential for increased fuel loading in the future as the dead snags begin to fall. There are no other foreseeable future actions on public lands to include; while there is potential for future projects or other management in the area, there are no current proposals with sufficient site specificity to conduct an analysis.

While there is some potential for a fire to come from adjacent areas: private lands to the north, Wilderness areas to the east, and in the future, from the down snags in the 36 Pit Fire area, the North Clack project includes sufficient treatments to provide opportunities to safely contain fires at appropriate sizes. Cumulative effects would be minimal because the effects of the proposed treatments when added to previous vegetation management projects would result in a more fire-resilient landscape by reducing the amount and arrangement of fuels within the area. Reducing the density of trees, raising the canopy base-height and reducing the vertical arrangement of fuels have the potential to moderate wildfire by limiting the potential for crown fire transition.

AIR QUALITY

The following actions have the potential to affect air quality: burning slash, exhaust generated by vehicles, equipment, chainsaws and helicopters and dust created by vehicles that drive on aggregate surface and native surface roads.

Activity fuels would be managed appropriately to minimize fire hazard while also minimizing effects to resources. The timing and quantity of smoke created by pile burning and broadcast burning would be managed to minimize air quality impacts.

Fine particulates less than PM2.5 (2.5 micrometers in diameter) cause reductions in visibility due to absorption and scattering of light by suspended particles. Almost all smoke particles from wildfire and prescribed fire, residential wood stoves and fireplaces, industrial boilers, field burning, diesel combustion, and other combustion processes can be characterized as fine particulates, primarily PM2.5 (ODEQ 2014). These small particulates can be inhaled and cause respiratory problems, especially in smoke sensitive portions of the population, such as the young, elderly, or those predisposed to respiratory ailments. Particles can accumulate in the respiratory system and aggravate health problem such as asthma.

Oregon Department of Environmental Quality classifies Class I Areas as "certain wilderness areas designated by Congress as federal Class I Areas that are subject to visibility protection under the Environmental Protection Agency's Regional Haze Rule and the federal Clean Air Act"(ODEQ 2014). The Salmon-Huckleberry Wilderness and the Roaring River Wilderness are located directly adjacent to the project area.

The closest community to the project area is Estacada, which is 8 miles to the northwest. Winds in this area can blow in different directions potentially affecting this community and the Portland metropolitan area as well.

Direct, Indirect and Cumulative Effects

The analysis area is quite large because smoke from fires in the project area can conceivably extend to the Portland metropolitan area in the event of an east wind event to central Oregon if the wind blows from the west.

If a fire does occur, there would be effects to air quality in the airshed which would likely be greater with no action compared to the action alternatives.

The burning of slash piles would typically be implemented during fall when favorable smoke dispersal conditions are expected. Traditionally, pile burning prescribed fires are conducted when the ground is frozen or saturated, reducing the potential of smoldering and creeping into adjacent fuels. Prescribed burning would occur when the weather conditions would minimize visibility effects to Class I airsheds.

Cumulatively, this project uses similar techniques and timing as other projects. While it is not known in what year treatments would occur or when piles would be available for burning, it is likely that prescribed burning of various projects would occur spread over several years and at appropriate times of the year which would result in less air quality impact compared to wild fire. Air quality throughout

Oregon can be affected by wildfire. Projects that reduce the likely size or intensity of wildfire have the effect of reducing overall air quality impact.

Cumulative effects of the action alternatives when added to other fuel reduction projects and the impacts of wildfire and of fire-suppression tactics would not be substantial, and the effects would be lower compared to no action.

Forest Plan Standards and Guidelines

The project is consistent with FW-039 to 053 because smoke would be minimized.

The Oregon Smoke Management Plan, which is administered by the Oregon State Forester, regulates the amount of forestry related burning that can be done at any one time. The amount of burning that can occur on any one day depends upon the specific type of burning, the tons of fuel loading to be ignited, and the atmospheric conditions available to promote particulate matter mixing and transportation of smoke away from sensitive areas. Through compliance and cooperation in the implementation of the Oregon Smoke Management Plan, the action alternatives would comply with the following laws and regulations.

- The Federal Clean Air Act (CAA) is the primary legal basis for air quality regulations across the country.
- Oregon Smoke Management Plan, OS477.013, as administered by Oregon Department of Forestry
- Oregon State Implementation Plan (The Federal Clean Air Act Implementation Plan)
- Oregon Administrative Rules OAR 629-0048-0001: Smoke Management Rules
- Oregon Visibility Protection Plan for Class I Areas, OAR 340-200-0040, section 5.2
- Forest Service Best Smoke Management Practices 2012
- Forest Service Manual 2500-Watershed and Air Management, Chapter 2580-Air Resource Management - The project would minimize the impacts on air quality through compliance and cooperation with Federal, state and local air regulations to prevent significant adverse effects of air pollutants, mitigation of adverse impacts form prescribed fire on air resources though the application of Best Smoke Management Practices, and protection of air quality related values within Class I areas.

As required by Agency policy (Forest Service Manual 5100 - Fire Management, Chapter 5140 Fire Use) and through inclusion, the 2008 Interagency Prescribed Fire Implementation Procedures Guide, a site-specific prescribed fire burn plan would be developed for all prescribed fire units in the project area. Prescribed fire plans are implementation documents to ensure that purposed and need goals and resource management objectives identified in the action alternatives are clearly defined, that site-specific prescriptions are developed to meet these goal and objectives, and to ensure plans and mitigations are in place to mitigate against undesirable fire effects, including smoke intrusions into sensitive airsheds, visibility impairment to Class I and II airsheds, and human health effects. PDCs would be incorporated into prescribed fire burn plans where appropriate.

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